What is claimed is:

1. A golf ball, comprising:

a solid core having a PGA compression of 55 or less, and

an outer cover layer having a Shore D hardness of at least 58,

the ball having a PGA compression of 80 or less.

2. A golf ball according to claim 1, wherein the outer cover layer has a Shore D hardness of at least 63.

3. A golf ball according to claim 1, wherein the ball has a PGA compression of 70 or less.

4. A golf ball according to claim 1, wherein the ball has a diameter of no more than 1.70 inches.

5. A golf ball according to claim 1, wherein the ball has a coefficient of restitution of at least 0.780.

6. A golf ball according to claim 1, wherein the ball has a coefficient of restitution of at least 0.790.

7. A golf ball according to claim 1, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 3100 Hz or less after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

8. A golf ball according to claim 1, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 1800 - 3100 Hz after the ball has been

maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

9. A golf ball according to claim 1, wherein the outer cover layer comprises ionomer.

10. A golf ball according to claim 2, wherein the ball has a PGA compression of 70 or less.

11. A golf ball according to claim 2, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 3100 Hz or less after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

12. A golf ball according to claim 2, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 100 - 3100 Hz after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

13. A golf ball according to claim 3, wherein the ball has a coefficient of restitution of at least 0.790.

14. A golf ball according to claim 3, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 100 - 3100 Hz after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

15. A golf ball according to claim 3, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 1800-2600 Hz after the ball has been

maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

16. A golf ball according to claim 10, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 1800-3100 Hz after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

17. A golf ball according to claim 4, wherein the ball has a PGA compression of 70 or less and the outer cover layer has a Shore D hardness of at least 63.

18. A golf ball according to claim 17, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 100 - 3100 Hz after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

19. A golf ball according to claim 1, wherein the outer cover layer comprises at least 50 weight % of an ionomeric resin which is formed from an acid copolymer with a melt index of 30 g/10 min. (ASTM D 1238E) or less prior to neutralization with metal ions.

20. A golf ball according to claim 2, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 1800 - 2600 Hz after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

21. A golf ball according to claim 9, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 1800 - 2600 Hz or less after the ball has been

maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

22. A golf ball, comprising:

a solid core, and

an outer cover layer having a Shore D hardness of at least 58,

the ball having a mechanical impedance with a primary minimum value in the frequency range of 3100 Hz or less after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

23. A golf ball according to claim 22, wherein the core has a PGA compression of 55 or less.

24. A golf ball according to claim 22, wherein the ball has a PGA compression of 80 or less.

25. A golf ball according to claim 22, wherein the ball has a mechanical impedance with primary minimum value in the frequency range of 1800-3100 Hz after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

26. A golf ball according to claim 22, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 1800-2600 Hz after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

27. A golf ball according to claim 22, wherein the outer cover layer comprises at least 50 weight % of an ionomeric resin which is

formed from an acid copolymer with a melt index of 30 g/10 min. (ASTM D 1238E) or less prior to neutralization with metal ions.

28. A golf ball according to claim 22, wherein the ball has a diameter of no more than 1.70 inches.

29. A golf ball, comprising:

a solid core having a PGA compression of 55 or less, and

an outer cover layer with a Shore D hardness of at least 58,

the ball having a mechanical impedance with a primary minimum value in the frequency range of 3100 Hz or less after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

30. A golf ball according to claim 29, wherein the ball has a PGA compression of 80 or less.

31. A golf ball according to claim 29, wherein the outer cover layer has a Shore D hardness of at least 60.

32. A golf ball according to claim 29, wherein the ball has a coefficient of restitution of at least 0.780.

33. A golf ball according to claim 29, wherein the ball has a mechanical impedance with a primary minimum value in the frequency range of 1800-2600 Hz after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

34. A golf ball according to claim 29, wherein the outer cover layer comprises at least 50 weight % of an ionomeric resin which is

formed from an acid copolymer with a melt index of 30 g/10 min. (ASTM D 1238E) or less prior to neutralization with metal ions.

35. A golf ball according to claim 29, wherein the ball has a diameter of no more than 1.70 inches.

36. A golf ball, comprising:

a core, and

an outer cover layer having a Shore D hardness of at least 58,

the ball having a mechanical impedance with a primary minimum value in the frequency range of 2600 Hz or less after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.

37. A golf ball, comprising:

a core having a PGA compression of 55 or less, and

an outer cover layer with a Shore D hardness of at least 58,

the ball having a mechanical impedance with a primary minimum value in the frequency range of 2600 Hz or less after the ball has been maintained at 21.1°C, 1 atm. and about 50% relative humidity for at least 15 hours.